Flipping and Spinning in Possible Worlds

Consider Jack & Jill in Cambridge and Princeton respectively, each with a fair coin. Jack & Jill can do one of three things

Nothing, spin and flip

denoted as N S F

Denote the result of spinning in Cambridge by a_s
flipping in " " a_f
spinning in Princeton " b_s
flipping in " " b_f

Then each of a_s, a_f, b_s, b_f is either H or T.

Consider 5 worlds

I: (N, N) first member of pair refers to Cambridge
second " " " " Princeton

II. (S, S) with outcome (a_s, b_s)

III (S, F) " " (a_s, b_f)

IV (F, S) " " (a_f, b_s)

V (F, F) " " (a_f, b_f)

Denote by A denote the antecedent of a counterfactual
So A can take the values (N,N), (S,S), (S,F), (F,S), (F,F)

and let $B(O)$ denote "the outcome is O"

So we are considering counterfactuals of the general form

$A \;\Box\!\!\rightarrow B(O)$

where if $A = (S, S)$, $O = (a_s, b_s)$

$A = (S, F)$, $O = (a_s, b_f)$

$A = (F, S)$, $O = (a_f, b_s)$

$A = (F, F)$, $O = (a_f, b_f)$

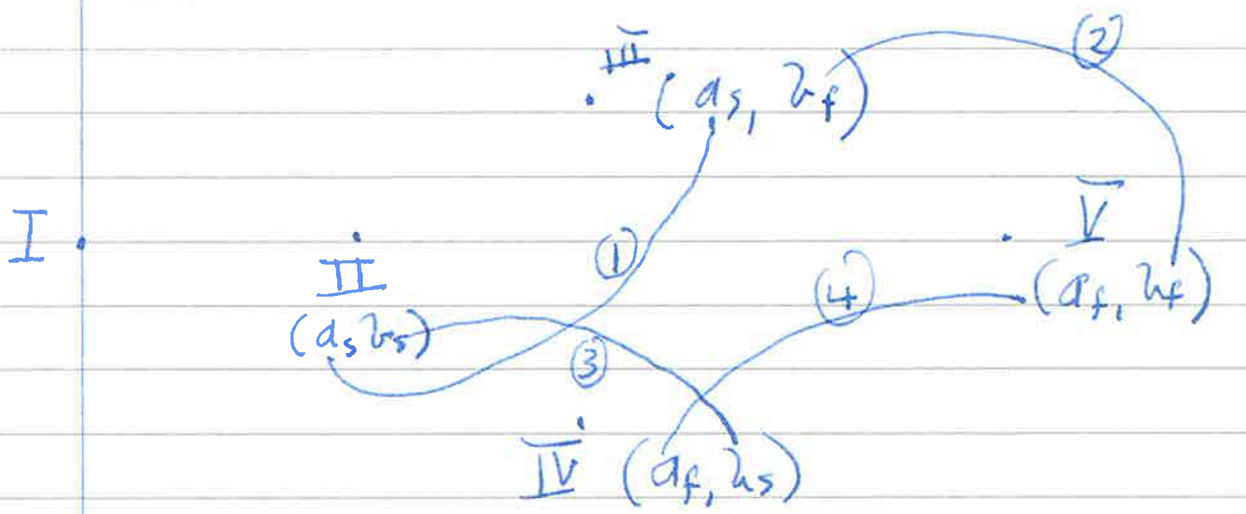
1. let I be the actual world.

Then consider $\exists O!\,(A \;\Box\!\!\rightarrow B(O))$

This is a Principle of Counterfactual Definiteness which is False under the assumption of indeterminism

But $A \;\Box\!\!\rightarrow \exists O!\,(B(O))$

a Principle of Counterfactual determinateness is true.



How can we establish that the matching condition is satisfied inside all the four ties ①, ②, ③ & ④.

2. Let VI be the actual world.

Then Lewis says ① is true.
and ② is true.

but not ③ and ④.

3. Nested Counterfactuals:

III → V gives tie ② as seen from world III

IV → V gives tie ④ as seen from world IV.

But the two world V's we are led to via the two routes are not the same world

This is the ladder-square problem, that can only be solved if we assume determinism.